

**A Science Curriculum Created
for Children with Autism**

An Honors Thesis
(Honors 499)

By

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A handwritten signature in cursive script that reads "Marita Edwards". The signature is written in black ink and is positioned above a thin horizontal line.

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Abstract

During the summer of 2008, this science curriculum was developed to effectively instruct students with Autism ages six to twelve. These lessons were specifically created to promote discovery learning and hands-on activities to keep the students actively engaged. Each lesson is designed for a 50-minute class period in an outdoor setting. After composing the lessons, each was implemented four times in one day. Then each lesson was adjusted accordingly to ensure that the lesson will run smoothly next summer when taught again.

Acknowledgements

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Summary of Honors Thesis

This thesis is a compilation of 38 lesson plans specifically designed for the Isanogel Day Camp for children with autism (ages 6 through 12). Together, these lessons form the science/social studies curriculum that this camp will be using for summers to come. Each lesson is based on the Indiana Academic Standards for either science or social studies; however, the main focus of these lessons is on the science standards. The lessons should be taught in 50-minute class sessions in an outdoor setting. The lessons were designed to promote hands-on learning that would excite the students and promote discovery learning.

While working at the Isanogel Day Camp for eight weeks, I implemented one of these lessons each day. During the course of one day, I would teach the lesson four different times to four different groups of students. I was able to see weaknesses and strengths in each lesson and make adjustments as the day continued. Therefore, I became extremely comfortable with teaching each lesson, and this allowed me to tailor the lesson to fit the individual students. After field-testing each lesson four times and adjusting the lessons accordingly, I know that these lessons that I have created are successful in the day camp setting.

As a professional, creating and implementing these lessons has given me an opportunity to understand the importance of hands-on learning, discovery learning, and active engagement to the success of learning. It has given me the opportunity to grow as an educator. I have come to appreciate the true value in giving students the opportunity to manipulate objects, make predictions, and take an active role in their

education. The more active opportunities the educator provides the students, the more ownership the students feel over the material they are learning. Also, after seeing the effects of discovery learning, I know that students are more motivated when they have taken an active role during their own learning experiences.

This experience taught me a great deal as an educator. It gave me confidence in my ability to create successful and meaningful lessons for students with different ability levels, as well as different learning styles. It illustrated the importance of hands-on learning to help students feel possession of their own education. Discovery learning is an effective tool for teaching students of different abilities. Overall, creating and implementing these lessons have helped me to be a more effective teacher.

Week: 1

Day: 1

Ages: All

Theme: Getting to know me!

Getting to know my tribe – painting canvas

Academic Standards/Skills Addressed:

K.5.1 Use shapes – such as circles, squares, rectangles, and triangles – to describe different objects.

1.1.1 Observe, describe, draw, and sort objects carefully to learn about them.

2.2.3 Estimate and measure capacity using cups and pints.

2.3.5 Investigate that things can be done to materials – such as freezing, mixing, cutting, heating, or wetting – to change some of their properties. Observe that not all materials respond in the same way.

3.2.2 Measure and mix dry and liquid materials in prescribed amounts, following reasonable safety precautions.

4.6.4 Observe and describe that some features of things may stay the same even when other features change.

Materials:

- Regular acrylic paint (Green, Red, Yellow, Blue, White)
- Water
- Containers in which to mix paint
- Canvas
- Paintbrushes

Procedures:

- Welcome
- You are the _____ and your color is _____. This represents _____.
- Today we are going to make ____ colored paint to symbolize your tribe on this canvas.
- Younger groups: Talk about shapes and animals to use on canvas.
- Older groups: have them measure amounts of each color of paint. Let them mix.
- Let them each pick out two colors to mix
- Let the children paint on designated sections of the canvas to represent their tribe.

Risk Management:

- Do not eat the paint.
- Do not drink the water.

Comments:

Week: 1

Day: 2

Age: All

Theme: Getting to know me!

Academic Standards/Skills Addressed:

Social Skills

3.4.6 Explain that people need water, food, air, waste removal, and particular range of temperatures just as other animals do.

Materials:

- Sidewalk Chalk (one color will suffice)
- Bubbles for the kids to blow

Procedures:

- What does everyone need so that they can live? (water, food, air, etc...)
- Well, today we are going to talk about how food goes through our bodies.
- Who knows where food goes into the body? (mouth)
- Where does it go once it is in your mouth? (throat - esophagus, stomach, etc...)
- Does it stay in your body? (no, it comes out as waste when you go to the bathroom)
- Draw a MOUTH, ESOPHAGUS, STOMACH, and INTESTINES on the sidewalk with chalk. (draw before children get there)
- Divide students so that some are standing on each organ.
- Have students join hands.
- Assign one student to be the food. The food will walk into the mouth. The students (with hands still clasped) in this area will stomp AROUND (make sure not on the "food's" feet) the food.
- Then food will enter the esophagus. The student will be twirled down the esophagus (ASK COUNSELORS TO DO THIS).
- The students representing the stomach will surround the food and walk in a circle.
- When the teacher says, "READY," the food will go to the intestines.
- The students forming the intestines will unclasp hands at the end and let the food exit the body.
- Repeat with others as the food.
- Discuss with the students that air is crucial for life. We need to breathe in oxygen so that our bodies can function.
- Ask: How do our bodies get air? (We breathe in and then exhale)
- Have students breath in and out.
- Then do stretching exercises with breathing in and out.
- Then let them play with bubbles. Talk about how you have to blow out air to make bubbles.

Risk Management:

- Only let the counselors twirl anyone.
- Focus on touching in APPROPRIATE ways.

Week: 1

Day: 3

Age: All

Theme: Getting to know me!

Academic Standards/Skills Addressed:

1.1.2 Investigate and make observations to seek answers to questions about the world.

3.4.6 Explain that people need water, food, air, water removal, and a particular range of temperatures, just as other animals do.

Materials:

- Green bean seeds
- Song – **The Gardener Plants the Seeds** (sung to the tune of The Farmer in the Dell)
 - The gardener plants the seeds. The gardener plants the seeds. High ho the derry oh. The gardener plants the seeds.
 - 2nd verse: The rain falls on the ground.
 - 3rd verse: The sun shines bright and warm.
 - 4th verse: The seeds begin to grow.
 - 5th verse: Flowers grow everywhere.
- Pitcher

Procedure:

- Does anyone know where our food comes from? (It is grown from the earth.)
- Someone has to plant it.
- Sing song.
- What does the farmer do first? (Sow the seeds – plant)
- What does he do next? (waters)
- Next? (gets rid of weeds)
- And what does the farmer do last? (He harvests the crops)
- Why does he gather them? (So we can eat them)
- Today we are going to plant some crops that will eventually grow into a plant that will provide us with food.
- Take students to go plant their crop.

Risk Management:

- Discuss how to use tools properly.
- Discuss correct gardening techniques.

Comments:

Week: 1

Day: 4

Age: All

Theme: Get to know me!

Academic Standards/Skills Addressed:

- 2.1.1 Manipulate an object to gain additional information about it.
- 3.2.7 Ask "How do you know?" in appropriate situations and attempt reasonable answers when others ask the same question.
- Understand that we can use our different senses to learn about the world around us.

Materials:

- Shoe Box with hole cut in the center and a footless sock taped to the top so that the students can feel objects in the box without seeing them
- Objects to feel
- Jelly Beans
- Four small bowls for the jelly beans
- Scented Sticks (Cinnamon, Vanilla, Mint)
- Plastic eggs

Instruction

- Has anyone ever heard of the five senses?
- Can you name one?
- Today we are going to explore our senses.
- Each table will have a different sense.
- Groups rotate.
- Feel – mystery boxes. Use feeling to predict objects – record findings
- Smell – scented sticks
- Taste – Different flavor jelly beans
- Hear – Shake plastic eggs
- See – look at parts of pictures to predict whole pictures
- Counselors at each station to help students perform the task.
- Come back together to discuss what the objects actually were.
- Write about the five senses in journal.

Risk Management:

- Do not put any objects in your mouth other than the jelly beans

Comments:

Week: 1

Day: 5

Age: All

Theme: Getting to know me!

Academic Standards/Skills Addressed:

1.6.1 Observe and describe that models, such as toys, are like the real things in some ways but different in others.

2.1.3 Describe, both in writing and verbally, objects as accurately as possible and compare observations with those of other people.

2.1.4 Make new observations when there is disagreement among initial observations.

Materials

- Salty water (labeled salty)
- Sugar water (labeled sweet)
- Lemon juice (labeled sour)
- Tonic Water (labeled bitter)
- Toothpicks
- Colored Pencils
- Tongue Map
- Words "Bitter" "Salty" "Sweet" "Sour" written on dry erase board

Procedures:

- Ask the students what they like to eat
- How do you know that you like it? (tastes good to them)
- How do you taste things?
- What helps you taste food? (Taste buds)
- Different taste buds on different parts of the tongue are responsible for tasting certain tastes.
- There are different parts that taste bitter, salty, sweet, and sour foods.
- We are going to experiment to see if we can discover the different areas.
- You are going to go to a certain area and use a toothpick to place the flavor on a certain part of your tongue.
- If you can taste it, then you found the area that tastes that flavor! If not, keep trying different spots!
- Write your results on your Tongue Map
- Record experiment in journal.

Risk Management:

- Each time you try a new spot on your tongue, get a new toothpick.
- NO double dipping. Throw the toothpicks away once you have used them once.
- Counselors and teacher at each station.
- Do NOT poke tongue hard with toothpick.
- Keep toothpicks to yourself.

Comments:

Week: 2
Theme: Animals

Day: 1

Age: All

Academic Standard/Skills Addressed:

K.4.2 Observe plants and animals, describing how they are alike and how they are different in the way they look and in the things they do.

2.4.1 Observe and identify different external features of plants and animals and describe how these features help them live in different environments.

Materials:

- Crayons
- Markers
- Pre-made flip books
- Plastic Eggs
- Small pictures of animals (that would fit inside an egg)
- Card – each with a different movement word written on it

Instruction:

- Everyone stand up
- Go to open area
- Have students go to one end
- Ask them to move towards the teacher by one of the following movements
 - “Walk” “Crawl” “Run” “Fly” “Wiggle” “Swim” “Hop” “
- These are all ways that different animals move.
- Can anyone name an animal that hops?
- Runs?
- Swims?
- Hide eggs with different pictures of animals inside
- Tell each student to find 7 eggs.
- They are to open their eggs and sort their animals according to how they move.
- There will be cards set out that each have a movement word on the front. The students place the picture near the word that describes how it moves.
- Review all of the animals that they sorted and how they move.
- Pass out flip books.
- Have students write a movement word on the bottom of each flap.
- Then have them lift the flap to illustrate the word by drawing pictures of animals that they know move that way.
- If extra time, play red light/green light, but they have to move a different way each time (crawl, hop, run, etc...)

Safety:

- Follow directions and listen carefully

Comments:

Week: 2
Theme: Animals

Day: 2

Age: All

Academic Standards/Skills Addressed:

2.1.7 Recognize and describe ways that some materials – such as recycled paper, cans, and plastic jugs – can be used over again.

2.4.1 Observe and identify different external features of plants and animals and describe how these features help them live in different environments.

Materials:

- Blindfold
- Empty toilet paper rolls
- Black construction paper
- Glue
- Googly eyes
- Scissors
- String

Instruction:

- Who has ever seen a bat?
- What do bats eat?
- How do bats see in the dark? (They use sound to see.)
- The bats make a sound that bounces off of the things that are around them.
- Can you locate anything by sound?
- We are going to play a game where we use sound to find each other.
- Play echo location game. (Like tag except one kid is the bat and is blindfolded. Thus the students who are not “it” have to stay in one place for safety purposes. The “it” says, “echo,” others reply (but do not move) “location.” Students use what they hear to find each other).
- Talk about how you can use sound to help you figure out where things are.
- Make bats that can hang from ceiling
 - Paint toilet paper rolls black
 - Glue on googly eyes
 - Use small white triangles for teeth
 - Have the students cut out wings from black construction paper
 - Glue wings on the back

Risk Management:

- Do not run with the blindfold on
- Do not hit people when you tag each other

Comments:

Week: 2
Theme: Animals

Day: 3

Age: All

Academic Standards/Skills Addressed:

1.4.3 Observe and explain that animals eat plants or other animals for food.

2.4.1 Observe and identify different external features of plants and animals and describe how these features help them live in different environments.

4.4.3 Observe and describe that organisms interact with one another in various ways, such as providing food, pollination, and seed dispersal.

Materials:

- Dry erase board and markers
- Pictures of bats
- Fact cards
- Poster board
- Markers

Procedures:

- Hold up picture of bat
- What is this? What did we learn about these yesterday?
- What else do you know about bats.
- KWL chart about bats
- Examples of new facts:
 - Mammals
 - Nocturnal
 - They help take care of our insect problems!
 - Without bats we would have a lot more insect bites.
 - A single brown bat can catch 600 mosquitoes in one hour.
 - 7,000 mosquitoes in one night!
 - They like to live near swamps and marshes where there are a lot of insects.
 - Many species are endangered.
- Each student picks a new fact.
- Then they illustrate a poster about their fact.

Comments:

Week: 2
Theme: Animals

Day: 4

Age:

Academic Standards/Skills Addressed:

1.4.2 Observe and describe that there can be differences, such as size or markings, among the individuals within one kind of plant or animal group.

2.6.2 Observe and explain that models may not be the same size, may be missing some details, or may not be able to do all of the same things as the real things.

K.6.1 Describe an object by saying how it is similar to or different from another object.

1.4.2 Observe and describe that there can be differences, such as size or markings, among the individuals within one kind of plant or animal group.

1.4.3 Observe and explain that animals eat plants or other animals for food.

2.4.3 Observe and explain that plants and animals both need to take in water, animals need to take in food, and plants need light.

Materials:

- Pine cones
- Soy nut butter
- Powdered Milk
- Honey
- Bird seed
- Pictures of animals (specifically birds and small insects) and plants
- Dry erase board and markers.
- Play-dough – Made from mixing 1 jar of peanut butter and 6 tablespoons of honey. Then add powdered milk until it is the consistency of playdough.
- Chow mein noodles
- Raisins

Procedure:

- Has anyone ever seen a bird eating from a bird feeder?
- What are the birds eating from those feeders?
- Do you think that all of the seeds are the same?
- Do you think that birds only eat from bird feeders?
- What else do you think they eat?
- Birds spend most of their time looking for food. All day long they are searching for food to eat. They must be pretty hungry! Do you think you could eat all day?
- Most birds are insectivores. This means that they eat insects. Can you think of an example of an insect that a bird might eat?
- Some birds eat small animals like mice. These birds are called carnivores. They eat meat. Can you think of a bird that eats meat? (Owls, eagles, vultures)
- Some birds eat plants. These birds are herbivores. Can you think of a bird that eats plants? Hummingbirds and geese.
- Some birds eat both plants and meats. These birds are called omnivores.

- Today we are going to make bird feeders using seeds. What type of birds do you think our bird feeders will feed? (Herbivores and Omnivores)
- Take pinecone, attach string, roll in soy nut butter, roll in seeds.
- Then we will go hang them up in a tree.
- Let's play a guessing game. See how soon you can guess what I am thinking.
 - (Give clues based on how the students are reacting)
 - Clue 1: It has 3 body segments.
 - Clue 2: It lives in a "hill" with other animals just like itself.
 - Clue 3: It has 6 legs.
 - Clue 4: It can be black and red.
 - Clue 5: It is often an unwelcome guest at picnics!
- Today we are going to look at the ant's body.
- All ants have three body sections. (draw)
- All ants have 6 legs. (draw)
- All ants have 2 antennae. (draw)
- All ants have 2 eyes. (draw)
- All ants have 1 mouth. (draw)
- Tell students they are going to make an ant.
- First the teacher uses the edible play-dough to show them how to make the three body segments.
- Then the teacher passes out play-dough and tells students to make the three segments of the body.
- Then teacher models adding 6 legs and 2 antenna to the body.
- Pass out chow mein noodles for the students to do the same.
- Then the teacher adds the raisins for the eyes.
- Pass out raisins for students to add to their ants.
- Let the students set their ants out on the trees for birds to eat.
- Sing **The Ants Go Marching In**.

Risk Management:

- Do not eat any materials.
- Follow directions.

Comments:

Week: 2
Theme: Animals

Day: 5

Ages: All

Academic Standards/Skills Addressed:

1.1.2 Investigate and make observations to seek answers to questions about the world.

2.1.6 Use tools to investigate, observe, measure, design and build things.

Materials:

- 8 Diet Coke 2 liters
- 8 Caffeine Free Diet 2 Liters
- 8 Coke 2 Liters
- 24 packets of cylinder packaged Mentos
- Record sheets

Procedures:

1. Hold up two liter.
2. What is this? (Coke.)
3. What do we do with this? (Drink it.)
4. Have you ever seen what happens when Coke and Mentos mix? (It explodes)
5. Do you think that trying different sodas would make the explosion different?
6. Record predictions on sheet.
7. Try it!
8. Record observations on sheet.
9. Talk about why the type of Coke (Caffeine Free, Regular, or Diet) might have made a difference.

Risk Managment:

Have students STAND BACK!

Comments:

Awesome. All kids stayed engaged.

Allow kids to help load Mentos and use group counting to count the number of Mentos.

Also, have them count down to the explosion.

Week: 3

Day: 1

Age: All

Theme:

Academic Standards/Skills Addressed:

3.1.2 Participate in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis.

Materials:

- Sponge fish
- 2 liter bottle with top cut off
- Fishing line to sponge and to pencil
- Pollution (soil, pancake syrup, salt, pepper, brown sugar, soapy water, red and green food coloring)
- Copies of Freddy the Fish cards

Procedures:

- After attaching the fishing line and weight to a sponge fish, put "Freddy the Fish" inside one gallon jar.
- Fill the soda bottle 3/4 full of water.
- Read or have students tell the story of Freddy the Fish from the note cards.
- When the story indicates, the children should add the "pollution" that correlates to the part of the story.
- Make Japanese fish (Hanging Koi)
 - Cut out two large paper fish
 - Glue colorful circles to one side of each fish (these are the scales)
 - Decorate head and body using crayons or markers
 - Staple the two sides together.
 - Staple the streamers to end.
 - Punch 2 holes in the face.
 - Tie string to these holes.

Risk Management:

Do not eat any materials.

Listen carefully to directions.

Wait your turn.

Comments:

Freddy the Fish cards

Imagine a clean river as it meanders through a protected forest. In this river lives Fred the Fish. How is Fred? Fred has lived in this part of the river all of his life. Now he is going to go on an adventure and travel downstream.

Fred swims past a farm. He passes a freshly plowed riverbank. It begins to rain, and some soil falls into the river. (DUMP SOIL INTO JAR.) How is Fred?

Fred nears a housing development. Some fertilizer from the pastures and lawns washes into the river. (DUMP BROWN SUGAR IN JAR.) This fertilizer made the plants in the river grow fast, but the river could not supply them with all of the nutrients they needed, so they died. Now they are decaying. This is taking some of Fred's oxygen. How is Fred?

Fred swims beside a large parking lot. Some cars parked on it are leaking oil. The oil is running into the river. (POUR PANCAKE SYRUP INTO JAR.) How is Fred?

During the winter, salt was spread on the road to melt the ice on the roads. Now the salt is being washed into the river by the rain. (ADD SALT TO JAR.) How is Fred?

Fred swims past the city park. Some picnickers threw their trash on the ground. The wind is blowing the trash into the river. (PUT PAPER DOTS IN JAR.) How is Fred?

A factory is leaking pollution into the water. (ADD SOAPY WATER.) How is Fred?

Finally, Fred swims past a hazardous waste dump located on the bank next to the river. Rusty barrels of toxic chemicals are leaking. The rain is washing these poisons into the river. (ADD RED AND GREEN FOOD COLORING.) How is Fred?

Week: 3
Theme: Animals

Day: 2

Age: All

Academic Standards/Skills Addressed:

- 1.1.1 Observe, describe, draw, and sort objects to carefully learn about them.
- 1.6.1 Observe and describe that models, such as toys, are like the real things in some ways but different in others.
- 2.1.5 Demonstrate the ability to work with a team but still reach and communicate one's own conclusions about findings.
- 3.4.5 Give examples of some kinds of organisms that have completely disappeared and explain how these organisms were similar to some organisms living today.

Materials:

- Dinosaur model
- Sand
- Shallow pool
- Paint Brushes
- White glue
- Potting soil
- Paper plates
- Penne Pasta
- Small Ziplock bags

Procedure for activity 1:

- What is a dinosaur?
- Do we still have dinosaurs living today?
- How do we know that they lived?
- Well, today we are going to go on a dinosaur dig.
- We are going to try to recreate a dinosaur based on the pieces that we find.
- Let students explore the sand to find pieces of the dinosaur.
- Work together to put together the pieces.
- Use communication skills to figure out how to put the model back together.
- The students will record their thoughts about the activity in journal.

Procedure for activity 2:

- Have students mix glue and soil together.
- Give each student a bag of pasta to break in the baggie by crunching it.
- Then they should spread the glue/soil mixture on the plate.
- Then use the pieces broken pasta to create a dinosaur fossil with the pasta.

Risk Management:

- Keep sand in the pool.
- Do not throw sand.

Comments:

Kids loved this. It was messy.

Week: 3
Theme: Animals

Day: 3

Age: All

Academic Standards/Skills Addressed:

3.1.2 Participate in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis.

4.4.2 Investigate, observe, and describe that insects and various other organisms depend on dead plant and animal material for food.

Materials:

- Owl Pellets – ordered from online
- Identification Page (7 copies – 1 for each student)
- Paper plates (2 per group)
- Sticks that come with packet

Procedures:

- Lets play a guessing game.
- Guess what animal I am thinking about:
 - It is a type of bird.
 - It flies at night.
 - It eats small animals, like mice and rats.
 - It can ask the question “Who?”
- What do we know about owls?
- Read owl book.
- Today we are going to dissect owl pellets.
- Owl pellets are what the owl can’t digest and throws up!
- Owls can’t digest hard parts of animals.
 - E.g. Teeth, bones
 - Fur and feathers do not work well
- A few other types of birds (hawks, eagles, falcons, and even some robins!) make pellets, too.
- Pair up kids (to appropriate pre-chosen groups)
- Pass out pellets on plates.
- Instruct the students that they will first use their fingers to break a small piece of the pellet.
- Feel for hard things.
- Use toothpick to separate the bone from the fur and feathers.
- Put the bones on the second plate.
- Students will match bones to the identification sheet.
- Try to put the animal together.

Alternate Activities for students who cannot participate:

- Find things in the sandbox.
- Play with science toys.
- Come back to

Risk Management:

- Review safety procedures for the sticks.
- Have pairs chosen in advance.
- Do not eat anything.
- Wash hands immediately after activity.

Comments:

Try telling the students that we are going to be scientific detectives. This might help them be even more excited about the activity. Perhaps even offer magnifying glasses to make it feel more authentic.

Great for all ages.

The kids loved it; the counselors did not love it so much!

Academic Standards/Skills Addressed:

- 2.1.1 Manipulate an object to gain additional information about it.
- 2.1.3 Describe, both in writing and verbally, objects as accurately as possible and compare observations with those of other people.
- 2.3.5 Investigate that things can be done to materials — such as freezing, mixing, cutting, heating, or wetting — to change some of their properties. Observe that not all materials respond in the same way.
- 3.1.1 Recognize and explain that when a scientific investigation is repeated, a similar result is expected.

Materials:

- Shallow plastic plate
- Food coloring
- Milk
- White liquid glue
- Dishwashing soap
- Toothpicks

Procedure:

- Use a clue hunt to let the students discover what we will learn about today.
- Take milk out of fridge. Let warm since it works better when it isn't cold.
- Give each student his or her own plate.
- Put a shallow layer of milk in plates.
- Add drops of food coloring in either a triangle or square formation.
- Put drop of soap in center.
- Watch colors move.
- Use toothpicks to stir colors.
- Have students talk to a partner about what they observed.
- Repeat the activity. Ask: Do you think the same thing will happen again?
- Regroup and explain: The milk has fat in it, and the soap breaks up the fat and allows the colors to swirl into the places where the fat used to be.
- Now repeat with liquid glue on one single plate.
- Before we do the experiment, ask the students to make a prediction about what will happen.
- Does it work, too?
- Talk about if their predictions were correct or not.
- Record observations in their journals.

Risk Management:

Do not drink the milk.
Listen to instructions.

Comments:

Week: 3
Theme: Animals

Day: 5

Ages: All

Academic Standards/Skills Addressed:

3.1.1 Recognize and explain that when a scientific investigation is repeated, a similar result is expected.

Materials:

- Earthworms
- Gloves for students who do not want to touch worms
- Egg (hardboiled)
- Bottle
- Paper strips
- Matches

Procedures for activity 1:

- Who has ever been digging in a garden?
- What did you find?
- Did anyone find any worms?
- Do you think the worms are good or bad for the plants? Why?
- Talk about how worms can help the soil.
- Add worms to garden.
- Return to classroom area and ask students to record this activity in their journals.

Procedures for activity 2:

- Then move onto the eggs experiment.
- How will we fit an egg into this bottle? (Listen to ideas)
- Tell them that I will do it without pushing it in!
- Light paper on fire.
- Drop into bottle.
- Place hardboiled egg on top.
- Egg gets sucked inside.
- Explain how the burning paper uses the oxygen in the bottle.
- Then there is a vacuum in the bottle and the egg gets pulled into the bottle.
- Repeat the experiment two more times.
- Have the students record this activity in their journals.

Risk Management:

- Use gloves for handling worms.
- Only the teacher handles matches.
- Students only OBSERVE the demonstration with the egg and matches.

Comments:

Week: 4
Theme: Plants

Day: 1

Ages: All

Academic Standards/Skills Addressed:

2.4.1 Observe and identify different external features of plants and animals and describe how these features help them live in different environments.

Materials:

- Cacti plant
- Starch
- Water
- Green paint
- Salt
- Cardboard
- Uncooked spaghetti
- Cactus cards (two pictures of three different types of cacti for the matching game)

Procedures:

1. Show cacti plant. Ask what it is.
2. Where are these found?
3. What makes them different than other plants?
4. Why can they live in the desert? (Thick skin, needles, etc...)
5. Has anyone ever seen a real cactus?
6. Mix together $\frac{1}{4}$ cup concentrated starch, $\frac{1}{4}$ cup concentrated starch, 2 tablespoon green tempera paint and 1 cup table salt.
7. Cardboard (peel off top layer).
8. Cut the cardboard into a cactus shape.
9. Paint a cactus using this paint.
10. Let dry.
11. Let students play matching with different cactus types (memory game).
12. Add uncooked spaghetti to add spikes.

Risk Management:

- Scissor safety.
- Do not eat any materials.

Comments:

Week: 4
Theme: Plants

Day: 2

Age: All

Academic Standards/Skills Addressed:

- 3.6.3 Explain how a model of something is different from the real thing but can be used to learn something about the real thing.

Materials:

- White paper
- Colored markers
- Scissors
- Plate or shallow bowl
- Water
- Plant seeds
- Pot from Art Class

Procedures:

- Today we are going to talk about flowers.
- Did you see any flowers today?
- Where?
- What about when they are dry?
- Do they look good?
- Hand out flowers coloring sheets to color. (The flowers should just be the center and petals – no stems or leaves.)
- Let kids color and cut out. (use colored pencils to prevent marker bleeding)
- Fold the leaves up so it looks like a thirsty flower.
- Place flowers on plate with a little water in it.
- It will open up.
- In dry weather, when flowers are short of water, they might close up their petals, like tulips.
- After a shower of rain, the petals will open up, just like those on your paper flower!
- Then plant flower seeds in pot made in art class.
- Record activities and reflections in journal.

Safety:

- Listen to directions.
- Use scissors carefully.

Comments:

Kids liked watching their flowers unfold.

Be careful how you fold them to ensure that they will unfold properly.

Week: 4
Theme: Plants

Day: 3

Age: All

Academic Standards/Skills Addressed:

2.4.3 Observe and explain that plants and animals both need to take in water, animals need to take in food, and plants need light.

3.4.4 Describe that almost all kinds of animals' food can be traced back to plants.

Materials:

- Markers
- Paper
- Dry Erase board
- Yarn
- Paper strips
- Glue

Procedures:

- Use "There was an Old Lady to Swallow a Fly" to introduce food chains.
- All animals need to eat.
- They all rely on each other for food and survival.
- All animals are involved in this system either by eating something and or being eaten.
- This system is called a food chain.
- Have the students make a list of organisms that would make up a food chain.
- Example: Sun, Acorn, Squirrel, Fox - Sun, Seeds, Mouse, Owl
- Have each student chose an organism or the sun
- Make a picture of the animal
- Use yarn to tie their picture around their neck.
- Let the students make "chains"
- Sun starts and holds both the acorn's and seed's hands.
- Acorn - Squirrel - Fox
- Seeds - Mouse - Owl
- Switch and see if they can line up again.
- Living things need food to survive.
- Animals get food from plants or other animals.
- Plants get food from the sun.
- This is a food chain, and sometimes it is called a food web.
- Make paper chains of food chains.
 - Leaf>Caterpillar>Bird>Snake>Hawk
 - Grass>Rabbit>Fox
 - Corn>Chicken>Man
 - Grass>Grasshopper>Mouse>Owl
 - Algae>Minnow>Bass>Man
 - Connect them all to a big yellow loop (a.k.a. the Sun)
- Can any of these chains be connected? (Make into a food web)
- All creatures and living things are part of this food web.

- Record activity in their science journals.
- Play food chain tag – use cones to make two lines far away from each other. Pick one student to be the owl. The rest are mice. The owl tries to tag the mice as they run across to the other safety line. If a student is tagged, he/she joins the owl and they both try to catch other mice. Keep playing until all of the students are owls. (This is like sharks and minnows only on land.)

Risk Management:

- Listen to directions.

Comments:

Week: 4
Theme: Plants

Day: 4

Ages: All

Academic Standards/Skills Addressed:

2.1.7 Recognize and describe ways that some materials — such as recycled paper, cans, and plastic jugs — can be used over again.

2.1.1 Manipulate an object to gain additional information about it.

Materials:

- Clear jar with lid or plastic bottles (washed)
- Pitcher of Water
- Food coloring
- Glitter and/or beads
- Vegetable oil
- Salt
- Flashlight
- Rubbing Alcohol
- Small Clear Glasses

Procedures:

- Has anyone ever tried to mix oil and water?
- What happens?
- Why don't they mix?
- Today we are going to use the fact that oil and water do not mix to create a lava lamp!
- Pass out bottles to each student.
- Fill each three-quarters of the way full with water.
- Add food-coloring color of choice.
- Sprinkle glitter and beads into mixture.
- Add vegetable oil.
- Let mixture separate.
- Pour salt into the jar.
- Watch. It should bubble like a lava lamp.
- Use a flashlight at the bottom for an added touch.
- Who thinks that we can make oil float between two liquids?
- Pair kids to do experiment.
- Give each pair a glass.
- Pour water into glass.
- Tilt glass slowly and pour in rubbing alcohol slowly. (DO NOT SHAKE GLASS, OR THE TWO LIQUIDS WILL MIX.)
- Fill eyedropper with the cooking oil and lower the tip into the later of rubbing alcohol, but not in the water.
- Squeeze out a couple of drops of the oil into the mixture.
- The oil blobs float between the two layers.
- The oil is lighter than the water, but heavier than the rubbing alcohol, so the oil floats between the two layers.

Risk Management:

- Do not drink or eat any of the materials.
- Work nicely with partners.
- Make sure that the plastic bottles have been washed out.
- Have the students wash their hands at the end of the activity.

Comments:

This was fun for the students.

Watch for spills and use counselors wisely to prevent spills.

Week: 5
Theme: Plants

Day: 2

Ages: All

Academic Standards/Skills Addressed:

2.1.1 Manipulate an object to gain additional information about it.

3.1.2 Participate in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis.

Materials:

- Raisins
- Powdered Jell-O
- Salt
- 3 Cans of Sprite per class
- Clear cups
- Small cups for salt and Jell-O
- Parachute
- Balls

Procedures:

- Who likes Sprite?
- What color is Sprite? (Or for the older kids, what is the difference between Coke and Sprite?)
- Have you ever felt the bubbles tickle your nose when you drink it?
- Those bubbles are carbon dioxide!
- Can everyone say carbon dioxide?
- Can you see these bubbles rise to the top when you put Sprite in a cup?
- When the bubbles get to the top the carbon dioxide leaves the drink and escapes into the air!
- Tell them to go to the picnic table.
- Explain that we are going to use the carbon dioxide bubbles to make raisins dance!
- What are raisins? (dried grapes – make connection to plants)
- Give each student a cup.
- Pass out five raisins.
- Pour sprite into each cup.
- Tell the students to place the raisins into their cups.
- Watch them move up and down with the bubbles.
- Have them dump out their mixture in the grass.

Procedures for activity 2:

- Then we are going to do a jumping Jell-O experiment.
- Tell them to put cups on the table again.
- Pour Sprite into each glass.
- Give them each a small cup of Jell-O mix and salt.

- Tell them to put salt and Jell-O into the cup of Sprite. (It should bubble up and overflow because of the carbonation. The salt helps to release the gases more quickly.)
- Then have them pour the mixture into the grass.
- Return to seats and watch me pour salt into a can of Sprite.
- It will overflow.
- Then we will play with the parachute and balls (pretend to be the raisins and the jell-O).

Risk Management:

- Do not drink the Sprite.
- Do not eat the Jell-O, Salt, or Raisins.
- Do not drink mixtures.

Comments:

Week: 5
Theme: Plants

Day: 3

Age: All

Academic Standards/Skills Addressed:

- 1.4.4 Explain that most living things need water, food, and air.
- 2.4.4 Recognize and explain that living things are found almost everywhere in the world and that there are somewhat different kinds in different places.
- 3.1.2 Participate in different types of guided scientific investigations, such as observing objects and events and collecting specimens for analysis.
- 3.1.3 Keep and report records of investigations and observations, such as observing objects and events and collecting specimens for analysis.
- 4.4.6 Explain how in all environments, organisms are growing, dying, and decaying, and new ones are being produced by the old ones.
- 5.2.4 Keep a notebook to record observations and be able to distinguish inferences from actual observations.

Materials:

- An old sock
- A shoebox
- Garbage bag or plastic wrap
- Potting soil
- Scissors
- Poster
- Bags – small Ziplock baggies
- Paint
- Glue
- Glitter
- Paper
- Yarn
- Paper plates

Instructions:

- Who has ever had a garden?
- What did you need to start your garden?
- You need seeds. Where can you get seeds?
- We can find seeds in nature.
- Today we are going to create a garden that has plants that grow in this area. To do this we are going to use socks.
- Put sock over shoe.
- Walk around in a grassy or wooded area.
- Take the sock off.
- Look at the different seeds that stuck to your sock. Place sock to the side.
- Line shoebox with plastic (bag or wrap)
- Fill with potting soil
- Cut a slit in the sock.
- Place on soil with seeds facing up. Bury sock in light soil.

- Water.
- As these seeds grow into plants, we will see plants that grow in this area.
- We will be recording observations of the plants that grow throughout the rest of the summer.
- Have the students record what they first did to prepare the boxes.
- Send them on a scavenger hunt for seeds, flowers, leaves, rocks, and pinecones.
- DO NOT PICK ANYTHING OFF OF A TREE OR PLANT. ONLY THINGS THAT HAVE ALREADY FALLEN OFF.
- Send them out for something:
 - Brown
 - Big
 - Little
 - Soft
 - Pointy
 - Green
 - Hard
- Let them create a work of art with all of these items.

Risk Management:

- Keep shoes on!
- Stay on paths and areas not in the woods.

Comments:

Week: 5
Theme: Plants

Day: 5

Age: All

Academic Standards/Skills Addressed:

2.4.6 Observe and describe the different external features of people, such as their size, shape, and color of hair, skin, and eyes.

Materials:

- Paper
- Ink pad
- Markers
- Pencils
- Paint
- Paper with two circles (one for the tree and one for the apple)
- Examples of each

Procedures:

- We are all humans.
- Each of us has a fingerprint that is very different.
- Have students look at their own hands and fingerprints.
- Can you see the designs?
- Some of us have circles, loops, and some of us have scars on them.
- Look at your tree stump that you are sitting on.
- What do you see?
- Do you see the rings?
- Each stump has different rings in the center. These rings can tell you how old the tree is, as well.
- Our fingerprints can tell you a lot, too!
- Detectives can use these fingerprints to figure out who did it!
- Today we are going to be putting our fingerprints on a paper and using them to make a picture!
- Show them Storey's book.
- Let them use the inkpads and markers to make any kind of picture they want with their fingerprints.
- Then ask them where apples grow?
- Have you ever seen an apple tree?
- Then show the pencil and picture activity.
- Make a tree on one circle using fingerprints and green paint.
- Make apples on the second circle with red paint using their fingertips.
- Then tape each picture on opposite sides of a pencil.
- Then they can spin the pencil to see apples on the tree.

Risk Management:

- Listen to directions.

Comments:

Academic Standards/Skills Addressed:

1.3.5 Recognize that and demonstrate how things near Earth fall to the ground unless something holds them up (i.e. the sand in the ocean).

2.6.2 Observe and explain that models may not be the same size, may be missing some details, or may not be able to do all of the same things.

Materials:

- Jar with screw on lid
- Water
- Blue Food Coloring
- Baby oil
- Shells
- Sand
- Sand Clay
- Cheap bedazzle jewels
- Dry Erase board
- Markers
- Hot Glue

Procedures:

- Have an interactive discussion about the ocean.
- Has anyone ever been to a beach?
- What beach?
- What did you do there?
- What does it look like?
- What animals live in the ocean?
- What about plants?
- What plants and animals live on the shore?
- What does the water taste like?
- Salt mixes with the water to give it a salty taste.
- What about the sand? Does it mix in the water or does it sink to the bottom?
- We are going to create a mini ocean to see that the sand does settle at the bottom of the ocean.
- Have students fill jars $\frac{1}{2}$ full with water.
- Add food coloring, shells, and sand.
- Add baby oil so that the jar is $\frac{3}{4}$ full.
- Screw on lid and hot glue shut.
- Let students shake and enjoy their mini ocean.
- Point out that the sand sinks to the bottom due to the gravity of the Earth.
- Next the students are to create sea creatures out of the sand clay.
- Have a list of creatures they can make written on the dry erase board.
- Show model of starfish.
- Then pass out clay.

- Let the students be creative with their creatures.
- Let them add jewels if they wish.

Risk Management:

- Instruct students not to drink the water or oil.
- Also, tell them not to eat the clay.

Comments:

This lesson was really good for all of the ages. It was fun and the outcome was awesome (the oil/water/sand jars). We did use plastic bottles instead of glass jars for the youngest class.

Week: 6
Theme: Earth/Water

Day: 2

Age: All

Academic Standards:

2.2.4 Assemble, describe, take apart, and/or reassemble constructions using such things as interlocking blocks and erector sets. Sometimes pictures or words may be used as a reference.

3.1.5 Demonstrate the ability to work cooperatively while respecting the ideas of others and communicating one's own conclusions about findings.

4.1.6 Explain that even a good design may fail even though steps are taken ahead of time to reduce the likelihood of failure.

Materials:

- Miniature Marshmallows
- Toothpicks
- Aluminum foil
- Plastic chips
- Water and tub

Procedures;

- Has anyone ever seen a tower?
- Where?
- How tall was it?
- Who do you think built it?
- Today we are going to be construction workers!
- We are having a building competition today.
- You and a partner will try to build the tallest tower out of marshmallows and toothpicks.
- BUT it needs to be sturdy!
- The tower has to stand throughout the whole class.
- At the end of the class we will judge to see who has the tallest tower that is still standing.
- Pair students up.
- Tell them to create their towers.
- Gather students together again.
- Who has ever been on a boat?
- Where?
- Did it float?
- How would it sink?
- Tell them that we are going to try to create boats out of aluminum foil that can hold as many poker chips as possible.
- Students will work with new partners to create boats.
- Test boats and count how many plastic chips can be placed into the boat before it sinks!
- See whose boat could hold the most.
- Then, return to marshmallow towers to judge.

- Inform them that everyone is a construction winner today!

Risk Management:

- Do not eat marshmallows.
- Use toothpicks carefully! Do NOT poke anyone with the toothpicks.
- Work nicely with your partner.

Comments:

Fun. May want to prepare kids that not all structures will stand for the whole class and that it is OK!

Week: 6
Theme: Earth/Water

Day: 3

Age: All

Academic Standards/Skills Addressed:

3.1.3 Keep and report records of investigation and observations using tools such as journals, charts, graphs, and computers.

3.1.4 Discuss the results of investigations and consider the explanations of other.

Materials:

- Pennies
- Eye dropper
- Drinking glass (plastic cups)
- Water
- Record Sheet
- Pencils
- Bowls
- Pepper
- Soap

Instructions:

- Give each student a penny.
- Adults will place a drop of water on the penny.
- Ask: What do you see? Did the water spill over the edge of the penny?
- No, it stayed in a ball. This is because water wants to stick together. This is called surface tension.
- Today we are going to look at the surface tension of water.
- Divide class into pairs.
- Pass out prediction sheets.
- Ask them to predict how many pennies they can add to a full cup of water without spilling it.
- Record. (Have butcher paper on the table for an alternative)
- Model how to drop a penny in (set on rim and roll in)
- Pass out cups of water and a bunch of pennies.
- Tell them to take turns rolling the pennies in.
- Remind them to count them.
- Add them until the cup overflows!
- Record the actual amount.
- Ask: How many did you add? Was your guess right? Were there more or less?
- You could add so many pennies because the water wanted to stick together. It was because of the surface tension of the water.
- Then introduce the run away pepper experiment.
- Ask: What will happen when I add pepper to this bowl of water?
- Do it.
- Ask: What will happen to the pepper if I put my finger in the water?
- Do it. (Nothing happens.)
- Ask: What will happen if I put soap on my finger and then put it in the water?

- Do it. (Pepper flees to the side of the bowl away from my finger.)
- Explain that the pepper was floating on top because the water molecules were sticking together. In other words, it was because of surface tension. When we added the soap, the water molecules did not stick together. Instead they wanted to stick to the soap! The soap **BROKE THE WATER'S SURFACE TENSION**.

Risk Management:

- Do not drink water.
- Do not eat the pepper.

Comments:

I spread out butcher block paper on the table so they could write down their predictions for the number of pennies that would fit into the cup. The kids seemed to like this.

Week: 6

Day: 4

Age: All

Theme: Water/Earth

Academic Standards/Skills Addressed:

- 1.3.1 Recognize and explain that water can be a liquid or solid and can go back and forth from one form to the other. Investigate by observing that if water is turned into ice and then the ice is allowed to melt, the amount of water is the same as it was before freezing.
- 2.1.1 Manipulate an object to gain additional information about it.
- 2.1.5 Demonstrate the ability to work with a team but still reach and communicate one's own conclusions about findings.
- 4.3.2 Begin to investigate and explain that air is a substance that surrounds us and takes up space, and whose movements we feel as wind.
- 5.3.4 Investigate that when liquid water disappears it turns into a gas (vapor) mixed into the air and can reappear as a liquid when cooled or as a solid if cooled below the freezing point of water.
- Exploring Liquids, Solids, and Gases

Materials:

- Jar
- Vinegar
- Balloons
- Baking soda
- Bottles
- Funnels
- Paper cups
- Different liquids

Intro:

- There are three states of matter. (Three different forms that objects can have)
- Solid, liquid, gas.
- First, let's talk about gases.

Gas:

- Everyone take a deep breath.
- What did you just do?
- Why are your lungs full? What is in your lungs?
- Hold up empty jar. Is this really empty?
- No, there is air inside!
- Air is a gas. It takes up space.
- Gather kids around.
- Place funnel in bottle.
- Add baking soda.
- Pour vinegar into bottle.
- Remove funnel and add balloon.
- What filled the balloon? Gas!

- We can't always see it, but it is there!
- Return to seats.

Liquids and Solids:

- Mix cornstarch and water to create oobleck.
- Let students feel the mixture.
- Let them discuss whether they think it is a liquid or solid.
- Then have a relay race transferring the oobleck from one bowl to another.

Conclusion:

- Ask students for examples of each state of matter. How did they know?

Risk managemtn:

- Let teachers pour the vinegar.
- Do not eat or drink any of the supplies
- Do not try to blow up the balloon with your mouth

Comments:

They loved the oobleck. Messy though.

Some kids did not want to touch it, and I had paper towels and water ready for those who did not like the feeling.

Week: 6
Theme: Earth/Water

Day: 5

Age: All

Academic Standards/Skills Addressed:

- 3.2.2 Measure and mix dry and liquid materials in prescribed amounts, following reasonable safety precautions.
- 3.2.5 Construct something used for performing a task out of paper, cardboard, wood, plastic, metal or existing objects.

Materials:

- Bottles
- Vinegar
- Baking Soda
- Funnels
- Aluminum foil
- Red food coloring

Procedures:

- If you look at a volcano, it looks just like a mountain.
- There is a difference though.
- The volcano opens at the top.
- In this hole, there is hot, liquid (melted) rock.
- Usually we cannot see this hot, liquid rock.
- When we see it coming out of the top, the volcano is erupting.
- When the hot, liquid rock comes outside of the volcano, where we can see it, we call it lava.
- This lava is very hot.
- People and animals must stay out of its way.
- Today we are going to make a model of an erupting volcano.
- Students will each get their own bottle.
- Fill with vinegar.
- Add food coloring. They can use whatever color (or mix them – review mixing colors)
- Recap.
- Let students surround the bottle with aluminum foil.
- When all students are done, regroup.
- Erupt one at a time. Have them guess what color the student chose before erupting it.
- Observe.

Risk Management:

- Follow directions.
- Only the teacher will add the baking soda.

Comments:

Week: 7
Theme: Earth/Water

Day: 1

Age: All

Academic Standards/Skills Addressed:

1.3.5 Recognize that and demonstrate how things near Earth fall to the ground unless something holds them up.

1.6.1 Observe and describe that models, such as toys, are like the real things in some ways but different in others.

2.1.7 Recognize and describe ways that some materials – such as recycled paper, cans, and plastic jugs – can be used over again.

3.1.1 Recognize and explain that when a scientific investigation is repeated, a similar result is expected.

Materials:

- Clue papers
- Film Canisters
- Baking Soda
- Vinegar

Procedures:

- Review baking soda/vinegar experiments from two previous days.
- Talk about what was produced. (Gas – Carbon dioxide)
- Ask how did we know? (Balloon filled with air, bubbles were produced)
- Today we are going to do some more with baking soda and vinegar.
- But to find out what we are doing you need to follow these instructions and put the clues together.
- Directions and Clues:
 - Written on Paper 1 handed to them – Go to where you might shoot hoops. Clue #1 = We
 - Written on Paper 2 hidden at basketball hoops – Go to where you do arts and crafts with Miss Leah. Clue #2 = are
 - Written on Paper 3 hidden at arts and crafts room – Go to where we had the talent show. Clue #3 = going
 - Written on Paper 4 hidden at fire pit – Go to where you can slide. Clue #4 = to
 - Written on Paper 5 hidden at slide – Go to where we exploded Diet Coke. Clue #5 = make
 - Written on Paper 6 hidden at Diet Coke area – Return to science area and solve the puzzle! Clue #6 = rockets!
- Students will then solve the puzzle.
- Tell the students that they are to decorate 2 rockets.
- Then they will tape each to a side of a film canister.
- Then we will go over to the side walk
- One at a time, I will put baking soda and vinegar in them.
- Watch them explode.

Risk Management:

Do not eat or drink vinegar or baking soda.

Have the students sit at least 5 feet away.

Comments:

Only the white film canisters work!

Kids thought the rockets were awesome.

They also loved the scavenger hunt that led them to discover what we were going to learn about.

After three days of different activities involving baking soda and vinegar, they definitely are starting to understand gases! Some even know that the gas that is produced is carbon dioxide!

Week: 7

Day: 2

Age: All

Theme: Earth/Water

Academic Standards/Skills Addressed:

(Social Studies Standards)

3.3.5 Observe and describe the physical characteristics of Indiana using words and illustrations and compare them to the characteristics of neighboring states.

4.3.3 Locate Indiana on a map as one of the 50 United States. Identify and describe the location of the state capital, major cities and rivers in Indiana, and place these on a blank map of the state.

Materials:

- 1 ½ cup of flour
- 1 ½ cup of salt
- 1 1/8 cup water
- Poster board

Procedure:

- Ask students if they have ever traveled?
- Where?
- How long did it take you?
- Did your parents use a map to get there?
- Show them a map of Indiana.
- What is this?
- Ask them what city they live in.
- Find their home cities on the map.
- Point out other big cities.
- Use a dry erase board to draw a state with major cities and let student label them.
- Tell them we are going to make a map of Indiana using dough for the state shape and buttons for the cities.
- Have them mix together flour and salt.
- Slowly stir in water.
- Have the students create a topographic map of Indiana with dough.
- Have them use buttons to position cities on maps.

Risk Management:

Students should not eat the dough.

Comments:

They thought it was fun. It was messy .

Week: 7

Day: 3

Age: All

Theme: Earth/Water

Academic Standards/Skills Addressed:

3.3.2 Observe and describe that there are more stars in the sky than anyone can easily count, but they are not scattered evenly.

1.3.5 Recognize that and demonstrate how things near Earth fall to the ground unless something holds them up.

Materials:

- 2 inch Styrofoam Balls
- Ribbon
- Aluminum Foil
- Black Construction Paper
- Glitter
- Glue

Procedures:

- Ask the students what is in outer space?
- Discuss their different ideas.
- Talk about how there are many stars in the sky – too many to even count.
- Then talk about what a comet is.
- Show a picture of one on the dry erase board.
- Talk about the tail and the actual comet and what each is made of.
- Have the students cover the Styrofoam Balls with Aluminum Foil.
- Then have them use duck tape to add three strands of curling ribbon.
- Let the students throw their comets.
- Let them have a contest to see who can throw theirs the furthest.
- Then bring everyone back to the circle.
- Talk about our galaxy.
- Ask who knows the name of our galaxy?
- What is it?
- Are there other galaxies?
- Show them pictures of the types of galaxies.
- Let them make a shape of one of the galaxies with the glue.
- Add glitter.
- Let the students name their galaxies.

Risk Management:

Do not throw the comets at each other.

Comments:

The kids loved to play with the comets.

They loved trying to see how far they could throw them.

Week: 7
Theme: Earth/Water

Day: 4

Age: All

Academic Standards/Skills Addressed:

1.3.5 Recognize that and demonstrate how things near Earth fall to the ground unless something holds them up.

Materials:

- Rocks
- Garbage Bag Squares
- Hole Punch
- String
- Paper

Procedures:

- Talk about wind and air resistance with the students.
- Ask them what they know.
- If they have ever seen parachutes, falling paper, and other objects.
- What makes these things fall more slowly?
- Take kids to find their men (a.k.a. rocks).
- Then have them attach them to the string and then the string to the bag squares.
- Let them release them at the playground.
- Then have students make paper airplanes.
- Show various examples of different paper airplanes.
- Show them how to make an airplane.
- Allow them to play with the airplanes.
- Have a contest to see how far they can throw them.
- Then pass out pinwheels for kids to play with.

Risk Management:

Make sure the students do not throw the rocks at each other.
The rocks are only to be dropped.

Comments:

The kids really enjoyed this. They loved playing with each toy. Also, the fact that they could take them all home made them so excited!

Week: 7
Theme: Earth/Water

Day: 5

Age: All

Academic Standards/Skills Addressed:

1.3.5 Recognize that and demonstrate how things near Earth fall to the ground unless something holds them up.

2.1.7 Recognize and describe ways that some materials — such as recycled paper, cans, and plastic jugs — can be used over again.

Materials:

- Random Junk
- Cartons
- Foam
- Eggs (Raw)
- Scissors
- Tape

Procedures:

- Talk about gravity.
- What would happen if you threw a raw egg into the air?
- Today we are going to try to create a container that will protect our egg!
- We want to put lots of padding and cushioning around the egg to protect it.
- Then let the students go to work on creating their containers.
- Let them decorate them.
- Drop them off the playground to see whose survives.

Risk Management:

Have students stay in the grassy area at the playground.

Comments:

Kids thought this was so much fun.

I would prepare students that some MAY break and explain that it isn't a big deal if it does break. This might prevent some meltdowns.

Week: 8
Theme: Goodbye!

Day: 1

Ages: All

Academic Standards/Skills Addressed:

Group work and roles

2.2.3 Estimate and measure capacity using cups and pints

Materials:

- Newspaper
- Flour
- Water
- Mixing bowl
- Spoon
- Shoebox
- Balloon

Procedures:

- Talk about mixing materials.
- Explain that we are going to mix water and flour to make paper mache.
- We are going to be making our very own piñatas.
- Mix one part flour to two parts water. Add more water or flour as needed.
- Bring out shoebox and balloon shape for them to cover.
- Give students different jobs.
- Let three students rip paper, let two students dip paper, and two students put them on. Rotate jobs as needed.

Risk Management:

Do not eat any materials.

Comments:

Messy. All kids participated.

We did only one layer of paper Mache. Should do at least 3 layers so it is solid.

Week: 8
Theme: Goodbye

Day: 2

Age: All

Academics Standards/Skills Addressed:
Review Day

Materials:

- Cones
- Bingo Sheets
- Word list
- Cover (Pennies?)

Procedures:

- Set up two rows of cones a good distance apart.
- Review the rules for Mice and Owls.
- Let the students play the game.
- Have them sit at the picnic table.
- Pass out bingo sheets.
- Tell the students to write one word in each square. (word list is a review of the whole summer)
- Then explain the rules of bingo.
- Play review bingo enough times for everyone to win at least once.
- Write or draw favorite science activity (or activities) in science journal.

Risk Management:

Tag nicely – do not push other students.

Comments:

1. This gas is produced when we mix baking soda and vinegar: carbon dioxide.
2. We planted these the first week of camp: green beans.
3. You get this color when you mix blue and red: purple.
4. These help you taste sweet, salty, bitter, and sour: taste buds.
5. This is the name of our galaxy: Milky Way.
6. These are made of frozen gases, rocks, and ice and zoom through outer space: comets.
7. These help people fall to the ground more slowly when they jump out of a plane: parachute.
8. This is the word used to describe why water molecules stick together: surface tension.
9. This does not mix with water: oil.
10. This plant grows in the desert where the water supply is low: cactus.
11. Each person has a unique one of these: fingerprint.
12. Bats travel using this: echolocation.
13. We dissected these to discover what the owl ate: owl pellets.
14. We live in this state: Indiana
15. We tried to keep these from breaking when we threw them from the playground: eggs.
16. We put these in diet coke to make it explode: Mentos.
17. This makes our water and air dirty: pollution.
18. We can examine these to learn about Earth's history: fossils.

1. Carbon dioxide
2. Green Beans
3. Purple
4. Taste Buds
5. Milky Way
6. Comets
7. Parachute
8. Surface tension
9. Oil
10. Cactus
11. Fingerprint
12. Echolocation
13. Owl Pellets
14. Indiana
15. Eggs
16. Mentos
17. Pollution
18. Fossils

Week: 8
Theme: Goodbye

Day: 3

Ages: All

Academic Standards/Skills Addressed:

3.3.6 Describe ways human beings protect themselves from adverse weather conditions.

Materials:

- Book – “Can it Rain Cats and Dogs?”
- 2 liter bottles
- Vortex connectors (1 for every 2 bottles – ordered online from any science store)
- Paint
- Piñatas (made on day 1 of week 8)

Procedures:

- Have students take turns drawing a card.
- Read the question and then read the answer from the book. (they are all the questions about tornadoes in the book on pages 41 and 42)
- After each child has had a chance to ask a question, make the bottles.
- Fill bottle 2/3 of the way full with water.
- Add food coloring.
- Connect an empty two-liter to the bottle with a vortex connector.
- Let them play with the tornado.
- Then, let them paint their piñata that they made on Monday if there is extra time.

Risk Management:

Do not drink the water.

Comments:

We did not have time to decorate any of the piñatas.

Week: 8
Theme: Goodbye

Day: 4

Ages: All

Academic Standards/Skills Addressed:

1.3.5 Recognize that and demonstrate how things near Earth fall to the ground unless something holds them up.

2.3.7 Investigate and observe that the way to change how something is moving is to give it a push or a pull.

Materials:

- Piñata
- Tops (1 for each camper)
- Bat
- String
- Blindfold
- Tug of war rope

Procedures:

- Talk about how we made the piñata.
- Discuss force.
- Ask the students if they know what force is.
- What types of force are there?
- A force is a push or a pull that can move an object.
- What is a push? Can you give me an example of something you push to move?
- What is a pull? Can you think of something that you pull?
- What would a hit be? Would it be a push or a pull?
- Today we are going to use “pushing” or hitting to open our piñata.
- Blind fold one student and spin him or her around.
- Let him or her try to hit the piñata.
- Let kids take turns hitting the piñata until someone breaks it open.
- When it bursts, each child is allowed to have ONE top.
- Let them play with their spinning tops.
- Regroup the students.
- Tell them that we are going to play tug-of-war.
- 3 campers verses a different 4.
- Mix up the groups.
- Campers verses counselors.

Risk Management:

Make sure the students are all far away when someone is swinging the bat.
Let them know they have to stay calm when retrieving their prize.
Review safety rules for tug-of-war.

Comments: